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मानक

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“पुराने को छोड़ नये के तरफ”

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“Step Out From the Old to the New”

IS 11173-2 (1985): Recommendations for tool shanks 7/24 taper for numerically controlled machine tools with automatic tool changers (tool rotating type): Part 2 Retention knobs [PGD 32: Cutting tools]



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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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Indian Standard

RECOMMENDATIONS FOR TOOL SHANKS 7/24 TAPER FOR NUMERICALLY CONTROLLED MACHINE TOOLS WITH AUTOMATIC TOOL CHANGERS (TOOL ROTATING TYPE) PART 2 RETENTION KNOBS

1. Scope — Covers dimensions and other requirements of the retention knobs for tool shanks 7/24 taper for numerically controlled machine tools with automatic tool changers (tool rotating type).

2. Types — Shall be of the following types:

Type 1 — With gripper angle 15°

Type 2 — With gripper angle 45°

Type 3 — With gripper angle 30°

Type 4 — With gripper angle 45°

{ Suitable for tool shanks, Type A according to IS : 11173 (Part 1)-1985 'Recommendations for tool shanks 7/24 taper for numerically controlled machine tools with automatic tool changers (tool rotating type): Part 1 Tool shanks'

{ Suitable for tool shank, Type B according to IS : 11173 (Part 1)-1985

3. Dimensions — Shall be in accordance with Tables 1 and 2 for Types 1 and 2 and Table 3 for Types 3 and 4.

4. Material — Shall be alloy steel having a tensile strength not less than 800 MPa in the core after case hardening.

5. Hardness — Shall be 620 to 700 *HV* after case hardening on the specified area as shown in figures under Tables 1, 2 and 3. The threaded portion shall be left unhardened.

6. General Requirements

6.1 Tolerance and dimensions without specified tolerances shall be of grade 'medium' according to IS : 2102 (Part 1)-1980 'General tolerances for dimensions and form and position: Part 1 General tolerances for linear and angular dimensions (*second revision*)'.

6.2 The thread under cut shall be in accordance with IS : 1369-1982 'Dimensions for screw thread runouts and undercuts (*second revision*)' and relief groove shall be Type F in accordance with IS : 3428-1980 'Dimensions for relief grooves (*first revision*)'.

6.3 The retention knobs shall be manufactured in one piece and shall be free from cracks, burrs and other manufacturing defects.

7. Designation

The retention knob, Type 1 for tool shanks A40 conforming to this standard shall be designated as :

Retention Knob Type 1 A40 — IS : 11173 (Part 2)-1985

8. Marking — Shall be marked with designation and manufacturer's name or trade-mark.

8.1 ISI Certification Marking — Details available with the Indian Standards Institution.

9. Protective Coating and Packing

9.1 Each retention knob shall be covered with a suitable rust proofing material and wrapped in a non-absorbent paper.

9.2 Each retention knob shall be packed in cartons bearing the designation, manufacturer's name or trade-mark.

Adopted 25 February 1985

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IS : 11173 (Part 2) - 1985

EXPLANATORY NOTE

This standard covers the retention knobs only. The tool shanks are covered in IS : 11173 (Part 1)-1985.

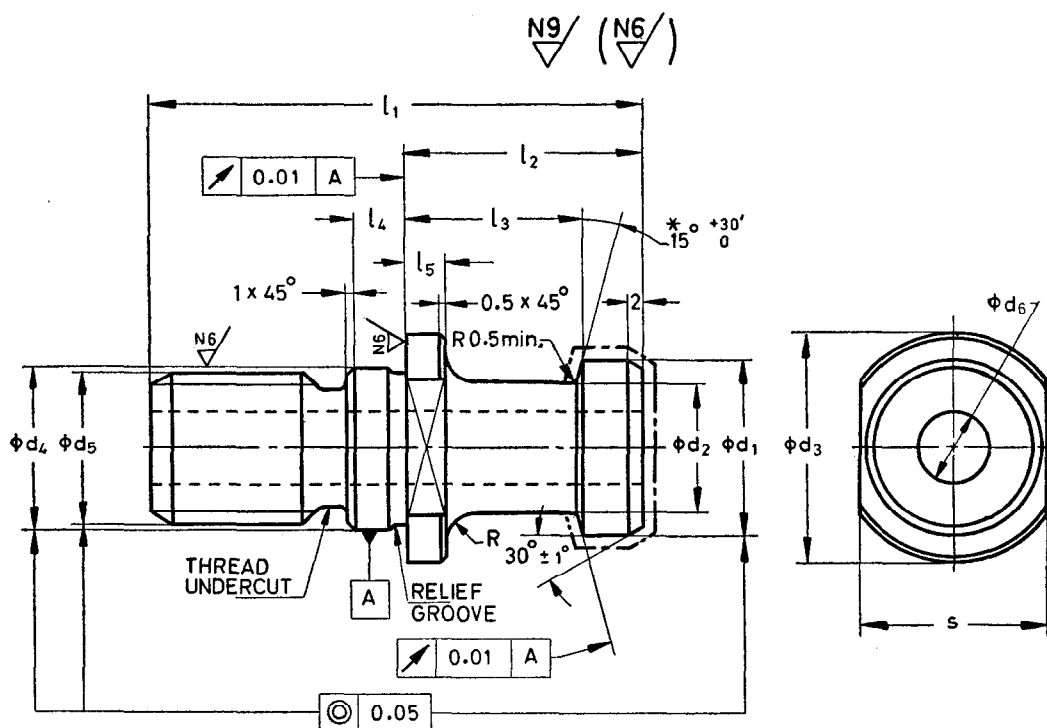
In the preparation of this standard, considerable assistance has been derived from International Standard ISO 7388/2-1984 'Tool shanks with 7/24 taper for automatic tool changers : Part 2 Retention knobs for shanks No. 40, 45 and 50 — Dimensions and mechanical characteristics'.

Retention knobs of Types 1 and 2 conform to ISO 7388/2-1984 and Types 3 and 4 conform to MAS 403-1982 'Dimensions of tool shanks for machining centres', issued by the Japan Machine Tool Builders' Association.

TABLE 1 DIMENSIONS OF RETENTION KNOBS, TYPE 1

(Clauses 3 and 5)

All dimensions in millimetres.



Suitable for Tool Shanks	d_1 0 -0.1	d_2 0 -0.1	d_3 0 -0.2	d_4 h6	d_5	d_6 ± 0.1 0	l_1	l_2 ± 0.1	l_3 ± 0.1	l_4	l_5	R	s 0 -0.1
A40	19	14	23	17	M16	7.00	54	26	20	7	4	3	19
A45	23	17	30	21	M20	9.50	65	30	23	8	5	4	24
A50	28	21	36	25	M24	11.50	74	34	25	10	5	5	30

Note 1 — R radius to be free of tool marks.

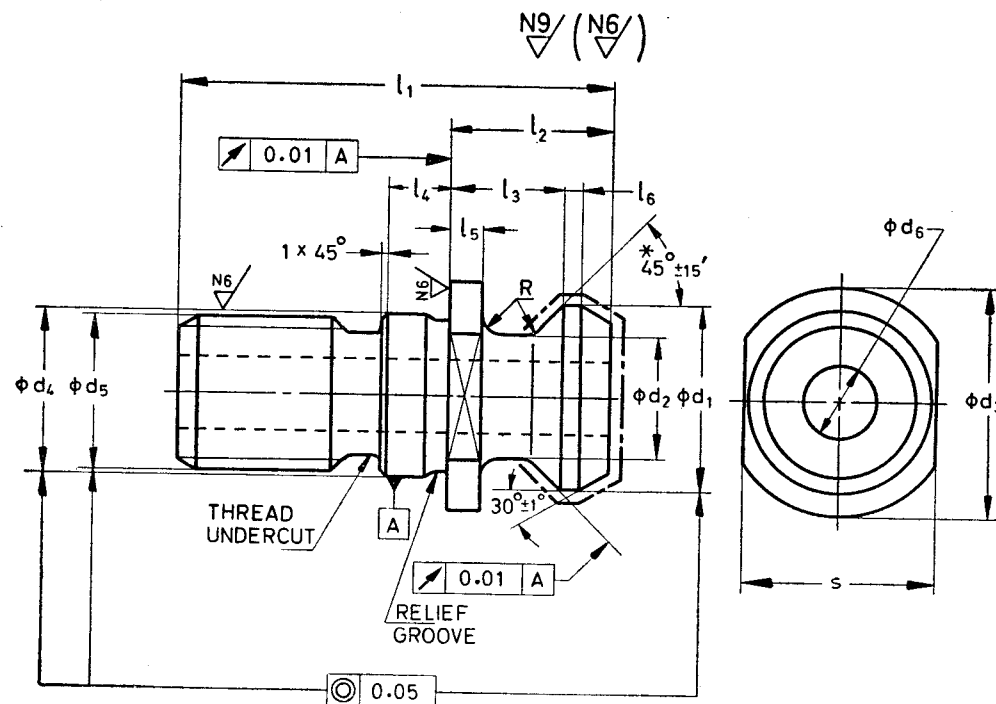
Note 2 — The figure is indicative of dimensions only and does not specify design feature.

Note 3 — Case hardened portion shown as long chain thick line.

TABLE 2 DIMENSIONS FOR RETENTION KNOBS, TYPE 2

(Clauses 3 and 5)

All dimensions in millimetres.



Suitable for Tool Shanks	d_1	d_2	d_3		d_4	d_5	d_6	l_1	l_2	l_3	l_4	l_5	l_6	R	s	
	0 -0.3	0 -0.3	Nominal	Tolerance	h6		+0.3 0		0 -0.3	0 -0.3		0 -0.5	0 -0.5	0 -0.5	Nominal	Tolerance
A40	18.95	12.95	22.50	0 -1	17	M16	7.35	44.50	16.40	11.15	7	3.25	1.75	2.65	18	0 -0.33
A45	24.05	16.30	30.00	0 -2	21	M20	9.25	56.00	20.95	14.85	8	4.25	2.25	2.65	24	0 -0.39
A50	29.10	19.60	37.00	0 -2	25	M24	11.55	65.50	25.55	17.95	10	5.25	2.75	2.65	30	0 -0.65

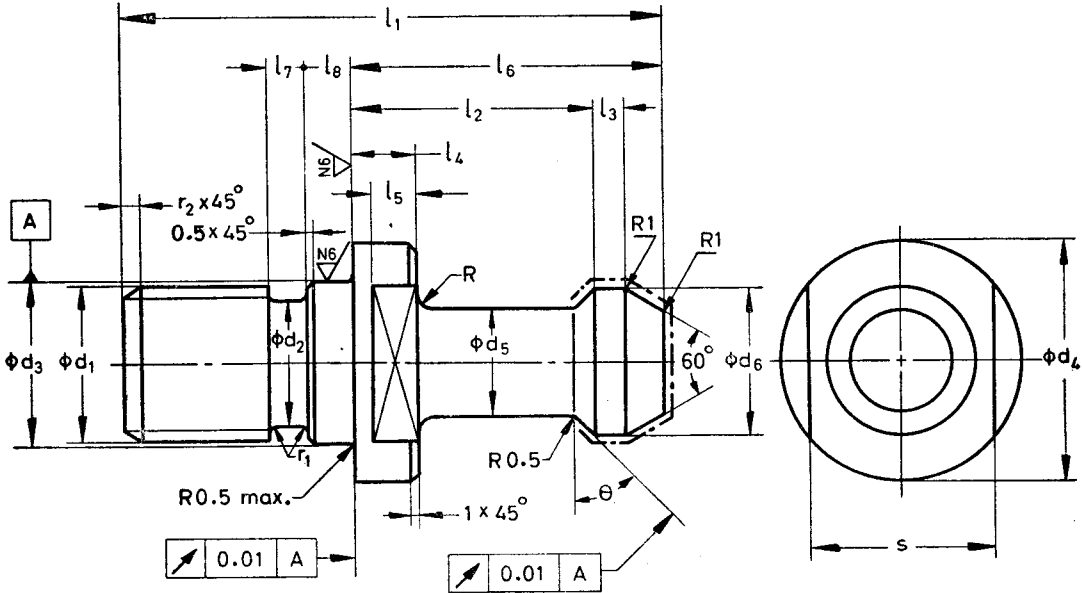
Note — Case hardened portion shown as long chain thick line.

TABLE 3 DIMENSIONS FOR RETENTION KNOBS, TYPES 3 AND 4

(Clauses 3 and 5)

All dimensions in millimetres.

N9/ (N6/)



Suitable for Tool Shanks	d_1	d_2	d_3 h7	d_4 0 -0.2	d_5 0 -0.1	d_6 0 -0.1	l_1	l_2 0 -0.1	l_3	l_4 0 -0.1	l_5	l_6 0 -0.1	l_7	l_8	r_1	r_2	R	s 0 -0.35	θ $\pm 15^\circ$
B30	M12	9.5	12.5	16.5	7	11	43	18	2.5	5	3.5	23	3	4	1	1.75	2	13	30° (Type 3) or 45° (Type 4)
B40	M16	13	17	23	10	15	60	28	3	6	4	35	4	5	1	2	3	19	
B45	M20	16.5	21	31	14	19	70	31	4	8	6	40	5	6	1	2.5	4	24	
B50	M24	20	25	38	17	23	85	35	5	10	8	45	5	8	1.5	3	5	30	

Note 1 — The figure is indicative of dimensions only and does not specify design feature.

Note 2 — θ is the gripper angle.

Note 3 — Case hardened portion shown as long chain thick line.